HOLDING TANK COMPONENT MANUAL FOR PRIVATE ONSITE WASTEWATER TREATMENT SYSTEMS

State of Wisconsin

Department of Commerce

Division of Safety and Buildings

SBD-10571-P (R.6/99)

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Published on June 11, 1999 by
Dept. of Commerce
Division of Safety and Buildings
Safety and Buildings Publication SBD-10571-P (R.6/99)

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I. INTRODUCTION AND SPECIFICATIONS

This Private Onsite Wastewater Treatment System (POWTS) component manual provides design, construction, inspection, operation, and maintenance specifications for a holding tank component. However, these items must accompany a properly prepared and reviewed plan acceptable to the governing unit to help provide a system that can be installed and function properly. Violations of this manual constitute a violation of chs. Comm 83 and 84, Wis. Adm. Code.

Note: Detailed plans and specifications must be developed, and submitted for review and approval by the governing unit having authority over the plan for the installation. Also a Sanitary Permit must be obtained from the department or governmental unit having jurisdiction. See Section VII for more details.

Table 1
SIZE AND ORIENTATION

Holding capacity	≥ 5 times design daily wastewater flow or 2000 gals, whichever is greater
Horizontal setback	Meets s. Comm 83.43 (9) (i), Wis. Adm. Code
Location to service access	≤ 25 feet to service drive or road measured from service access opening or pump out port

Table 2
OTHER SPECIFICATIONS

Tank design and construction	Meets ch. Comm 84.25
Tank access	≥ 1 opening having an inside diameter of at least 8 inches.
Alarms or warning system	Meets s. Comm 83.43 (9) (e), Wis. Adm. Code
Water meter	Meets s. Comm 83.54 (2), Wis. Adm. Code
Anchor for installation in saturated soils	Meets s. Comm 83.43 (9) (g), Wis. Adm. Code and the weight of anchor is ≥ 1.5 x tank volume in cubic feet x 62.4 pounds per cubic foot - weight of tank
Installation inspection	In accordance with ch. Comm 83, Wis. Adm. Code
Management	In accordance with ch. Comm 83, Wis. Adm. Code and this manual

II. DEFINITIONS.

Definitions not found in this section, are located in ch. Comm 81 of the Wisconsin Administrative Code or the terms use the standard dictionary definition.

A "Cobbles" means rock fragments greater than 3 inches, but less than 10 inches in diameter.

B. "Service provider" means the individual or company that is responsible for managing and maintaining the holding tank system.

C. "Stones" means rock fragments greater than 10 inches in diameter, but less than 24 inches.

III. DESCRIPTION AND PRINCIPLE OF OPERATION.

The POWTS holding tank serves to contain wastewater or sewage on site until the contents is pumped and hauled to a proper point of disposal. Pumping and monitoring reports are submitted to the department or designated agent.

The holding tank installed under this component manual holds domestic wastewater, stormwater or clearwater inclusions permitted under s. Comm 82.36, Wis. Adm. Code, and/or human excrement until pumped by an individual licensed under NR 113, Wis. Adm. Code.

Industrial wastewater is regulated by the Department of Natural Resources (DNR), and is not included in this specification, unless approved by the DNR in advance.

See figure 1, for a typical holding tank design.

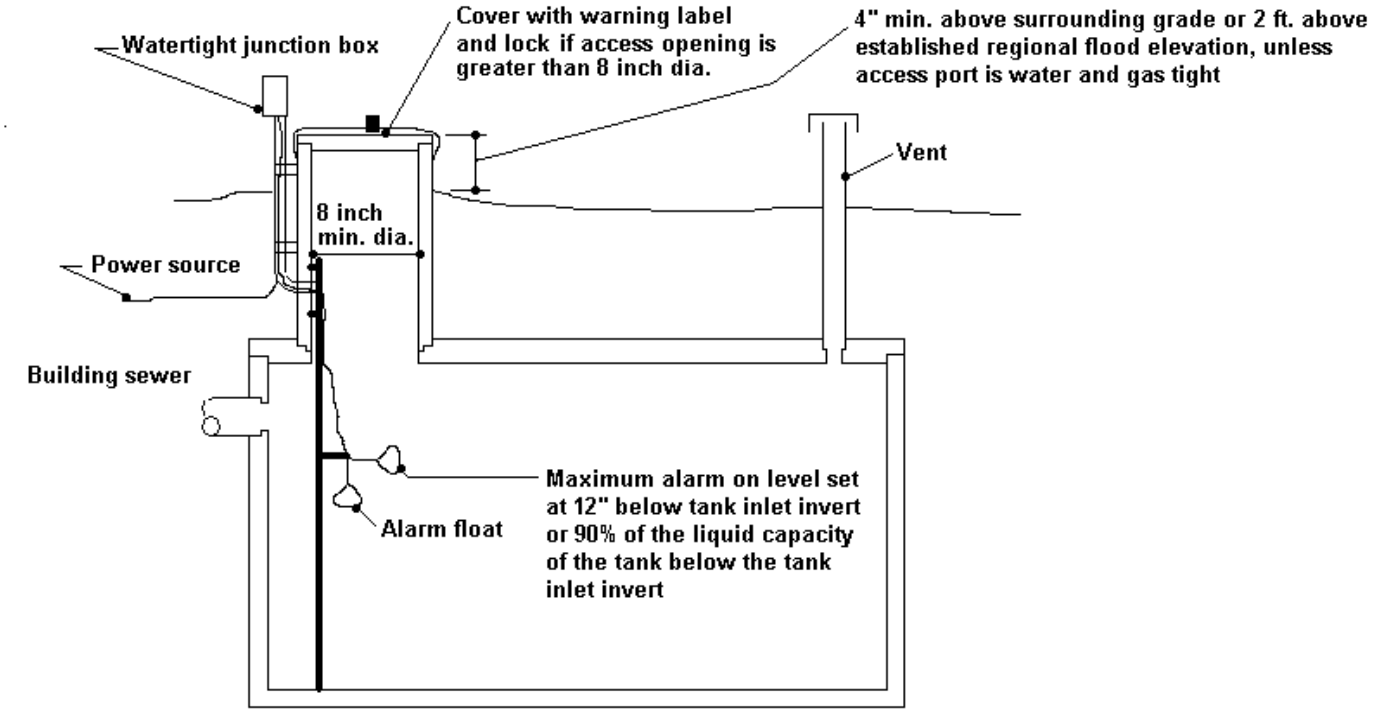

Figure 1 – Cross-Section of Holding Tank

IV. DESIGN

A. Tank Size

One- and Two-family Dwellings. Minimum liquid capacity of a holding tank for one- and two-family dwelling application must not be less than 2000 gallons or 5 times the estimated daily wastewater flow determined in accordance with s. Comm 83.42 (3), (4), or (5), Wis. Adm. Code, whichever is greater.

Public Facilities. Minimum liquid capacity of a holding tank for public facilities must not be less than 2000 gallons or 5 times the estimated daily wastewater flow whichever is greater as determined in accordance with s. Comm 83.42 (6), Wis. Adm. Code or Table 3. Facilities that are not listed in Table 3 are not included in this specification.

Table 3 Public Facility Wastewater Flows		
Source	**Unit**	**Estimated Wastewater Flow (gpd)**
Apartment or Condominium	Bedroom	100
Assembly hall (no kitchen)	Person (10 sq. ft./person)	1.3
Bar or cocktail lounge (no meals served)	Patron (10 sq. ft./patron)	4
Bar or cocktail lounge* (w/meals - all paper service)	Patron (10 sq. ft./patron)	8
Beauty salon	Station	90
Bowling alley	Bowling lane	80
Bowling alley (with bar)	Bowling lane	150
Camp, day and night	Person	25
Camp, day use only (no meals served)	Person	10
Campground or Camping Resort	Space, with sewer connection and/or service building	30
Campground sanitary dump station	Camping unit or RV served	25
Catch basin	Basin	65
Church (no kitchen)	Person	2
Church* (with kitchen)	Person	5
Dance hall	Person (10 sq. ft./person)	2
Day care facility (no meals prepared)	Child	12
Day care facility* (with meal preparation)	Child	16
Dining hall* (kitchen waste only without dishwasher and/or food waste grinder)	Meal served	2
Dining hall* (toilet and kitchen waste without dishwasher and/or food waste grinder)	Meal served	5
Dining hall* (toilet and kitchen waste with dishwasher and/or food waste grinder)	Meal served	7
Drive-in restaurant* (all paper service with inside seating)	Patron seating space	10
Drive-in restaurant* (all paper service without inside seating)	Vehicle space	10
Drive-in theater	Vehicle space	3
Employees (total all shifts)	Employee	13
Floor drain (not discharging to catch basin)	Drain	25
Gas station / convenience store	Patron (minimum 500 patrons)	3
Gas station (with service bay) Patron Service bay	 Patron Service bay	 3 50
Hospital*	Bed space	135
Hotel, motel or tourist rooming house	Room	65
Medical office building Doctors, nurses, medical staff Office personnel Patients	 Person Person Person	 50 13 6.5
Migrant labor camp (central bathhouse)	Employee	20

* = May be high strength waste

Table 3 Public Facility Wastewater Flows (continued)		
Source	**Unit**	**Estimated**

		Wastewater Flow (gpd)
Mobile Home (Manufactured home) (served by its own POWTS)	Bedroom	100
Mobile home park	Mobile home site	200
Nursing, Rest Home, Community Based Residential Facility	Bed space	65
Outdoor sport facilities (toilet waste only)	Patron	3.5
Parks (toilets waste only)	Patron (75 patrons/acre)	3.5
Parks (toilets and showers)	Patron (75 patrons/acre)	6.5
Public shower facility	Shower taken	10
Restaurant*, 24-hr. (dishwasher and/or food waste grinder only)	Patron seating space	4
Restaurant*, 24-hr. (kitchen waste only without dishwasher and/or food waste grinder)	Patron seating space	12
Restaurant, 24-hr. (toilet waste)	Patron seating space	28
Restaurant*, 24-hr. (toilet and kitchen waste without dishwasher and/or food waste grinder)	Patron seating space	40
Restaurant*, 24-hr. (toilet and kitchen waste with dishwasher and/or food waste grinder)	Patron seating space	44
Restaurant* (dishwasher and/or food waste grinder only)	Patron seating space	2
Restaurant* (kitchen waste only without dishwasher and/or food waste grinder)	Patron seating space	6
Restaurant (toilet waste)	Patron seating space	14
Restaurant* (toilet and kitchen waste without dishwasher and/or food waste grinder)	Patron seating space	20
Restaurant* (toilet and kitchen waste with dishwasher and/or food waste grinder)	Patron seating space	22
Retail store	Patron (70% of total retail area ÷ 30 sq. ft. per patron)	1
School* (with meals and showers)	Classroom (25 students/classroom)	500
School* (with meals or showers)	Classroom (25 students/classroom)	400
School (without meals or showers)	Classroom (25 students/classroom)	300
Self-service laundry (toilet waste only)	Clothes washer	33
Self-service laundry (with only residential clothes washers)	Clothes washer	200
Swimming pool bathhouse	Patron	6.5

* = May be high strength waste

B. Monitoring/Management Equipment.

The holding tank POWTS includes the installation of a water meter meeting the AWWA C700 - 90 standards and a direct-reading remote registration system which meets AWWA Standard C706 on the water supply of the facility that discharges to the holding tank. The meter and remote reading system registers in gallons or cubic meters.

The alarm for the holding tank installation is an audible and/or visual alarm posted in a conspicuous location in the building served or on a post near the tank protected from the weather. The alarm is connected to a float in the holding tank.

V. SITE PREPARATION AND CONSTRUCTION

A. Site Preparation.

A minimum of 3 inches of compacted bedding material is provided under the holding tank. Bedding material is sand, gravel, granite, lime rock or any unsaturated soil material of a sandy loam or coarser texture. 100 % of the bedding material passes a 1/2 inch screen.

B. Sanitary Permit

Prior to the construction of the system, a sanitary permit, obtained for the installation must be posted in a clearly visible location on the site. Arrangements for inspection(s) must also be made with the governmental unit issuing the sanitary permit.

C. Tank Installation.

1. Care is taken in setting the tank to avoid damage to the structural integrity of the tank. The excavation for the tank provides at least 12 inches of space around the tank to allow free flow of backfill material along the tank walls.

2. The tank is set level.

3. Access openings that terminate at grade and/or less than 2 ft. above the established regional flood elevation (if applicable) have water and gas tight access ports. Access openings that terminate at least 4 inches above the surrounding grade and 2 ft. above the established regional flood elevation (if applicable) are not required to have water and gas tight access ports.

4. The connection of the holding tank to the sanitary sewer is by means of a mechanical compression type joint conforming to s. Comm 84.40, Wis. Adm. Code.

5. All access ports are installed so as to permit a minimum of 3 feet of clear space above the port and 2 feet in all directions horizontally from any point of the access port.

6. Below grade connections. Joints between the tank, access ports, access opening risers, and covers are watertight if located below finished grade.

7. Where a holding tank is installed in saturated soils (see Comm 85 for the determination of soil saturation), the tank is anchored using the following equation:

   Weight of anchor ≥ 1.5 x tank volume in cubic feet x 62.4 pounds per cubic foot - weight of tank

D. Monitoring/Alarm Equipment Installation.

Meter installation. A water meter is installed on the water supply discharging to the holding tank. All exterior hydrants are excluded from the metered flow. The meter is installed downstream of all point-of-entry water treatment devices. A control valve is installed on each side of the meter.

Alarm installation. The alarm float is set to turn on the alarm when liquid volume is at 12" below tank inlet invert or at 90% of the liquid capacity of the tank below the tank inlet invert. Alarm wiring is installed in accordance with NEC 300 and ILHR 16.23, Wis. Adm. Code.

E. Backfill

The holding tank excavation is backfilled with soil material and tamped into place. The cobble content does not exceed 35% and no stones will be permitted in the backfill material.

VI. OPERATION, MAINTENANCE and PERFOMANCE MONITORING

A. The system owner is responsible for the operation and maintenance of the system, locking device, alarm and access.

The owner or owner's agent is required to submit reports as required by s. Comm 83.55 (1), Wis. Adm. Code, to the county or other appropriate jurisdiction and/or the department.

B. Design approval and site inspections before, during, and after the construction are accomplished by the county or other appropriate jurisdictions in accordance with ch. Comm 83 of the Wis. Adm. Code.

C. Performance Expectations

Maintenance cycle. The holding tank must be serviced by licensed pumpers. An alarm system is installed to activate when the tank is ≤ 90% full.

Performance monitoring. At the time of servicing, the service provider files a report with the department or designated agent.

D. User's Manual: A user's manual is to accompany the component. The manual is to contain the following as a minimum:

Diagrams of all components and their location.

Names and phone numbers of local health authority, component manufacturer or POWTS service provider to be contacted in the event of component failure or malfunction.

Information on the periodic maintenance of the component, including electrical/mechanical components.

VII. PLAN SUBMITTAL AND INSTALLATION INSPECTION

A. Plan Submittal

In order to install a system correctly, it is important to develop plans that will be used to install the system correctly the first time. The following checklist may be used when preparing plans for review. The checklist is intended to be a general guide. Conformance to the list is not a guarantee of plan approval. Additional information may be needed or requested to address unusual or unique characteristics of a particular project. Contact the reviewing agent for specific plan submittal requirements, which the agency may require that are different than the list included in this manual.

General Submittal Information

- Photocopies of soil reports forms, plans, and other documents are acceptable. However, an original signature is required on certain documents.
- Submittal of additional information requested during plan review or and questions concerning a specific plan must be referenced to the Plan Identification indicator assigned to that plan by the reviewing agency.
- Plans or documents must be permanent copies or originals.

Forms and Fees

- Application form for submittal, provided by reviewing agency along with proper fees set by reviewing agent.
- Copy of a Notarized Holding Tank Agreement.

Soils Information

- Complete Soil and Site Evaluation Report (form # SBD-8330) for each backhoe pit described; signed and dated by a certified soil tester, with license number.
- Separate sheet showing the location of all borings. The location of all borings and backhoe pits must be able to be identified on the plot plan.
- A soil test form is not required where lot size and/or setback limitations preclude any soil absorption system. A CST; designer, responsible for the systems design; plumber, responsible for the installation; or POWTS inspector of the governmental unit having jurisdiction must clearly indicate why the parcel may not accommodate a soil absorption system.

Documentation

- Architects, engineers or designers must sign, seal and date each page of the submittal or provide an index page, which is signed, sealed and dated.
- Master Plumbers must sign, date and include their license number on each page of the submittal or provide an index page, which is signed, sealed and dated.
- Three completed sets of plans and specifications (clear, permanent and legible); submittals must be on paper measuring at least 8-1/2 by 11 inches.

Plot Plan

- Dimensioned plans or plans drawn to scale (scale indicated on plans) with parcel size or all property boundaries clearly marked.
- Benchmark and north arrow.
- Setbacks indicated as per appropriate code.
- Location information; legal description of parcel must be noted.
- Location of any nearby existing system or well.

System Sizing

- For one- and two-family dwellings the number of bedrooms must be included.
- For public facilities, the sizing calculations must be included.

Tank And Pump / Siphon Information

- All construction details for site-constructed tanks.
- Size and manufacturer information for prefabricated tanks.
- Installation information must include vent and manhole locations, depth to inlet; and depth of freeboard and anchoring provisions, if applicable.
- Cross section of tank or tanks to be installed in a series, with information regarding liquid depth, depth of high water alarm, approved joint and any modifications (suction pipes, etc.) clearly marked.

Septage Disposal

- For design flows less than 3000 gpd, written statement from owner regarding method of disposal.
- For design flows greater than 3000 gpd, written verification that requirements of s. NR 113.07 (1) (e), Wis. Adm. Code are met.

B. Inspections.

Inspection shall be made in accordance with ch. 145.20,. Wis. Stats., and s. Comm 83.26, Wis. Adm. Code. The inspection form on the following two pages may be used. The inspection of the component installation and/or plans is to verify that the component at least conforms to specifications listed in Tables 1 and 2 of this manual.

POWTS HOLDING TANK INSPECTION REPORT
(ATTACH TO PERMIT)

GENERAL INFORMATION

Permit Holder's Name	☐ City ☐ Village ☐ Town of	County	Sanitary Permit No.
State Plan ID No.	Tax Parcel No.	Property Address if Available	

TANK INFORMATION

TYPE	MANUFACTURER	CAPACITY

SETBACKS

Property Line	Well	Water Service	Building	Service Road	OHWM	Swimming Pool

DEVIATIONS FROM APPROVED PLAN

DATE OF INST. DIRECTIVE:	DATE OF ENFORCEMENT ORDER:
DATE OF REFERRAL TO LEGAL COUNSEL:	

COMMENTS (Persons present, discrepancies, etc.)

COMPONENTS NOT INSPECTED

Plan Revision Required		Signature of Inspector:	

Sketch on other side

ELEVATION DATA

Point	Back sight	Height of instrument	Foresight	Elevation	Comments
Bench mark					
Bldg. sewer					
Tank inlet					
Tank outlet					
Tank inlet					
Tank outlet					

SKETCH OF COMPONENT & ADDITIONAL COMMENTS